REMARKS

Status of the Claims

Claims 12-18, 20 and 39-43 are pending (subject to further claims being allowable upon the allowance of suitable generic claims). The independent claims are claims 12, 14, 20 and 39.

Claims 12, 13, 18 and 20 are amended herein to correct informalities. More particularly: The action pointed out a discrepancy between the mark-up version and the clean version of the claims in the prior response. Applicant corrects that mistake in claim 12 herein; e.g. the word "the" has been inserted in the ninth line of claim 12. The Examiner asserted insufficient antecedent basis for the limitation "the lateral movement" in line 2 of claims 13 and 18. Claims 13 and 18 have been amended herein to correct the lack of insufficient antecedent basis. Claim 12 has been further been amended herein to clarify the antecedent basis for the phrase "the foaming concentrate". Reference on line 9 of claim 12 to the foam concentrate refers to the "fire fighting foam concentrate" of line 8. Claim 20 is amended herein to correct a typo just noticed.

Claim 39 is further amended herein to clarify that foam concentrate is proportionally metered into variably flowing fire fighting fluid. In the instant invention the need for proportional metering is occasioned by the variably flowing fire fighting fluid, or the fire fighting fluid having a varying volumetric flow rate.

The above referenced action requested a definition of the term "lateral" found in claims 13 and 18. Although original claim 18 recited "adjusting to lateral movement of a baffle/piston within the conduit", the above referenced Action requests for the first time for applicant to define lateral. A "definition" follows. To the extent, however, in the light of the definition offered, it is considered inappropriate to continue to use the word "lateral" to indicate movement forward and backward along the line of flow of the fire fighting fluid in the conduit, then applicant is willing to amend claims 13 and 18 from "a lateral movement" to "a forward and backward movement", or the like.

Lateral: The word lateral was chosen to indicate "back and forth" or "forward and backward" or from "left to right" in the drawings. In the specification, movement of the piston to the right and to the left is discussed on page 27. A sliding bafflehead moved forward and backwards is discussed in the specification on page 14. The movement of the baffle or the piston within the conduit referred to in claims 13 and 18 is similar to the movement of a piston within a

chamber. It was also commented upon on page 14 that the nozzles are depicted such that the water movement is sideways or left to right.

Rejection of Claim 20 under § 112 First Paragraph

Claim 20 is rejected under § 112 first paragraph as containing subject matter not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicant respectfully traverses.

As the Examiner acknowledges, the specification originally discloses on page 3, lines 8-10:

> "A typical automatic nozzle designed in accordance with the present invention would be designed to operate over a range of flow rates, such as from 500 gallons per minute to 2,000 gallons per minute at a targeted discharge pressure, such as 100 psi."

Claim 20 recites:

> "Self educting fire fighting foam concentrate into the nozzle using a portion of a fire fighting fluid flowing at at least 500 gpm through the nozzle;".

Applicant submits that the quote from page 3 illustrates that at the time the application was filed applicant had possession of the claimed invention in so far as it pertains to fire fighting fluid flowing at at least 500 gpm through the nozzle. Applicant also submits that the limitation, "at at least 500 gpm" is useful in that it directs attention to larger sized nozzles as opposed to the smaller variety of nozzles. Applicant does not know how to further respond to the Examiner's statement that,

> "...while being enabling for 500 gpm to 2000 gpm (page 3, lines 9-10), does not reasonably provide enablement for flow rates greater than 500 gpm...the specification does enable a flow rate approaching infinity."

On the one hand, the comment is not clear. On the other hand, rather than "enablement" being a test for the "written description requirement", the MPEP and the Federal Circuit hold that the § 112 First Paragraph "written description" requirement and the § 112 Second Paragraph "enablement" requirement are two separate requirements, each with their own tests. Applicant requests clarification, therefore, as to what a "lack of enablement" has to do with failing to meet

the "written description" requirement, or vice versa, and under which body of law the rejection is being made.

Claim 12 is rejected under § 112 Second Paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More particularly, in claim 12 the Examiner finds the recitation of "fire fighting foam concentrate" to be a double inclusion of the "fire fighting concentrate" recited in line 1 of the claim. Applicant respectfully traverses.

Line 1 of claim 12 involves the preamble. Preambles may be used to supply descriptive functionality for the claim without literally being limitations of the claim. Given such historic and recognized usage of a preamble, applicant respectfully submits that claim 12 does not suffer from indefiniteness.

§ 102 Rejection

Applicant respectfully traverses the rejection of claims 12-15 as anticipated by Klein.

The first element of claim 12 includes "adjusting...to maintain a predetermined pressure drop across the orifice...". In neither the first nor subsequent Action has the Examiner pointed to any teaching or disclosure in Klein "to maintain a predetermined pressure drop across the orifice". Applicant finds no such "adjustment" in Klein. Applicant submits, therefore that a *prima facie* case has not been made and that allowance is appropriate for claim 12 and those that depend thereon, without further traversal or discussion.

Similarly claim 16 recites "setting a pilot valve to maintain one or more preselected pressure drops across the orifice", and claim 17 depends upon claim 16. Claim 16 and 17 are allowable for the same reason as claim 12 above, namely that the Examiner pointed to no teaching in Klein for maintaining a predetermined pressure drop. Similarly, claim 20 recites "automatically adjusting a fire fighting nozzle to control discharge pressure;". Klein does not discuss a fire fighting nozzle. Further, Klein does not discuss automatically adjusting to control discharge pressure. The Examiner does not locate any such teaching in Klein, explicitly or inherently, for automatically controlling discharge pressure. Applicant finds none. A *prima facie* case has not been made. Claim 20 and those that depend thereon are thus allowable, without further traversal or discussion.

In regard to independent claims 14 and 39, a short comparison of Klein and applicant is fruitful.

Klein and applicant address different "proportioning" problems. Klein addresses the problem of efficiently and effectively switching between a 3% foam to a 1% foam or a 6% foam or a 10% foam, and vice versa. This problem is efficiently and cost effectively solved for Klein by providing adjustable stops or shoulders in a foam concentrate additive line so that an operator can manually adjust a size of a foam concentrate orifice to correspond to the source (1%, 3%, 6%, 10%, etc.) of foam concentrate to which the line is going to be connected. Klein does not address the problem of maintaining this correct proportion thereafter, during operation, when or if the flow rate of the water and/or the water pressure through the main water line varies.

In contrast, given a foam concentrate source, be it 1% or 3% or 6% or 10% or the like, applicant is concerned with maintaining the correct proportion of this foam concentrate when and if, during operation, water fluid flow rate and/or water pressure in the water line varies. (For simplicity's sake, applicant is assuming here that the fire fighting fluid is water, which it usually is.) Applicant does not address how one adjusts for changing between a source of 1% foam concentrate to a source of 3% foam concentrate or to a source of 6% foam concentrate, or vice versa. There are known means in the industry for making this adjustment and handling this "problem". Applicant simply does not go into this issue. Thus, although Klein and applicant both use the term "proportioning", they are using it in different senses, to address different problems. One needs to take into account this situation.

Klein teaches a check valve. When an upstream valve, such as a deluge valve, is opened, water pours through Klein's conduit, hitting Klein's check valve and moving it to its full opened position. Klein repeatedly asserts that Klein's check valve piston is "lightly biased" by a spring; see column 2 line 67 and column 8 line 33, for instance. One of skill in the art would anticipate, therefore, that the time period for Klein's check valve to open should be a very small fraction of a second. During that time period, in which Klein's check valve moves from closed to open, hydraulic conditions, or flow through the valve, will be turbulent, unstable, characterized by cavitation and affected by forces of friction and inertia. One of skill in the art would believe that there is no accurate "model" to describe fluid flow through the check valve during the short unstable transient period of the opening. Considering no more than the turbulence of the leading

edge of the water and the effect of the air pressure in the pipe or the line, there is no reason to believe that the relative degree of openness of the orifice would be a reliable indicator of the rate of fluid flow through the orifice during that period. Klein does not teach that the degree of openness of his check valve during the transient opening period bears any correlation with fluid flow rate through the orifice. The impediments to such knowledge include the transitoriness of the effect and the instability of the forces in operation.

Applicant respectfully submits that the Examiner's "inherency-type" argument in regard to claim 14 and 39, therefore, fails. Per claim 14, the Examiner has not shown that it is inherent in Klein that during the opening of Klein's check valve the varying orifice acts as a fire fighting fluid flow rate indicator. In regard to claim 39 the Examiner has not shown that Klein inherently teaches foam concentrate "proportionally metered" into the fire fighting fluid (wherein "proportionally metered" is understood in the sense of the proportional metering problem of the instant application, that is proportionally metered taking into account varying fire fighting fluid flow rate through the conduit.)

Reconsideration and further examination is respectfully requested.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Sue Z. Shaper, Applicants' Attorney at 713 550 5710 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

9/30/02
Date

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I hereby certify that this is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR § 1.10 on the date indicated below and is addressed to:

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Mark Up Claim Sheet

12. (Twice Amended) A method for proportioning fire fighting concentrate into variably flowing fire fighting fluid, comprising:

adjusting a fire fighting fluid orifice in a fire fighting fluid conduit to maintain a predetermined pressure drop across the orifice as fire fighting fluid flow rate through the conduit varies;

varying a fire fighting foam concentrate orifice in concert with the adjustment of the fire fighting fluid orifice; and

supplying fire fighting foam concentrate through the concentrate orifice into the fire fighting fluid proximate a pressure drop such that a ratio of the foam[ing] concentrate proportioned into the fire fighting fluid flowing through the conduit, to the fluid, remains approximately constant.

13. (Twice Amended) The method of claim 14 wherein varying a fire fighting fluid orifice includes adjusting [the] a lateral movement of a baffle within the conduit.

18. (Twice Amended) The method of claim 14 wherein varying a fire fighting fluid orifice includes adjusting [the] a lateral movement of a piston within the conduit.

20. (Twice Amended) A method [for] comprising:

automatically adjusting a fire fighting nozzle to control discharge pressure;

self-educting fire fighting foam concentrate into the nozzle using a portion of a fire fighting fluid flowing at at least 500 gpm through the nozzle; and

automatically varying a foam proportioning orifice in order to meter foam concentrate self-educted into the nozzle in accordance with fire fighting fluid flow rate through the nozzle.

39. (Twice Amended) Method for proportioning foam concentrate into a variable flow fire fighting fluid conduit, comprising:

placing pressurized fire fighting foam concentrate in communication with pressurized fire fighting fluid variably flowing through a conduit;

arranging a pilot valve sensitive to the variable flow rate of the fire fighting fluid in the conduit; and

adapting the pilot valve to adjust a flow rate of foam concentrate into the fire fighting fluid such that the foam concentrate is proportionally metered into the variably flowing fire fighting fluid.

12. A method for proportioning fire fighting concentrate into variably flowing fire fighting fluid, comprising:

adjusting a fire fighting fluid orifice in a fire fighting fluid conduit to maintain a predetermined pressure drop across the orifice as fire fighting fluid flow rate through the conduit varies;

varying a fire fighting foam concentrate orifice in concert with the adjustment of the fire fighting fluid orifice; and

supplying fire fighting foam concentrate through the concentrate orifice into the fire fighting fluid proximate a pressure drop such that a ratio of the foam concentrate proportioned into the fire fighting fluid flowing through the conduit, to the fluid, remains approximately constant.

13. The method of claim 14 wherein varying a fire fighting fluid orifice includes adjusting a lateral movement of a baffle within the conduit.

18. The method of claim 14 wherein varying a fire fighting fluid orifice includes adjusting a lateral movement of a piston within the conduit.

20. A method comprising:

automatically adjusting a fire fighting nozzle to control discharge pressure;

self-educting fire fighting foam concentrate into the nozzle using a portion of a fire fighting fluid flowing at at least 500 gpm through the nozzle; and

automatically varying a foam proportioning orifice in order to meter foam concentrate self-educted into the nozzle in accordance with fire fighting fluid flow rate through the nozzle.

39. Method for proportioning foam concentrate into a variable flow fire fighting fluid conduit, comprising:

placing pressurized fire fighting foam concentrate in communication with pressurized fire fighting fluid variably flowing through a conduit;

arranging a pilot valve sensitive to the variable flow rate of the fire fighting fluid in the conduit; and

adapting the pilot valve to adjust a flow rate of foam concentrate into the fire fighting fluid such that the foam concentrate is proportionally metered into the variably flowing fire fighting fluid.